

08/93/125

CJC



PATENT
P54508

THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patentee: **HAE-SEUNG LEE**

U.S. Patent No.: **6,832,291 B2**

Issued: **14 December 2004**

For: **MEMORY SYSTEM FOR IMPROVING DATA INPUT/OUTPUT
PERFORMANCE AND METHOD OF CACHING DATA RECOVERY
INFORMATION**

**REQUEST FOR ISSUANCE OF CERTIFICATE OF CORRECTION
UNDER 37 C.F.R. §1.322**

Attn: Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Certificate
DEC 28 2004
of Correction

Sir:

Issuance of certificate of correction for Figures 1, 2, 3 and 5 for Patent of U.S. Patent No. 6,832,291 pursuant to 37 C.F.R. §1.322(a)(1)(i), and expedited issuance of the certificate of correction under MPEP §1480.01, are respectfully requested.

Folio: P54508
Date: 12/22/04
I.D.: REB/kf

DEC 29 2004

REMARKS

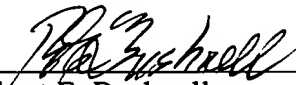
Letters patent of U.S. Patent No. 6,832,291 contain the marked-up copy of the drawing corrections of Figures 1, 2, 3 and 5 proposed by Applicant on 7 April 2000 during the prosecution of Serial No. 08/931,125. In the Notice of Allowability concurrently mailed with a Notice of Allowance on 3 September 2004, the Examiner failed to notify Applicant of a requirement for submission of corrected drawing figures which incorporate the drawing corrections proposed on 7 April 2000. The Office, instead of having notified the Applicant, prior to publication, of the requirement for submission of corrected formal drawing figures which incorporate the proposed drawing corrections of 7 April 2000, simply printed and published the "marked-up copy" of the proposed drawing correction of Figures 1, 2, 3 and 5.

Under MPEP §1480.01, a photocopy of 1) Figures 1, 2, 3 and 5 printed in the Letters Patent of U.S. Patent No. 6,832,291, 2) Applicant's drawing corrections proposed on 7 April 2000, and 3) a Notice of Allowability mailed on 3 September 2004 (Paper No. 09010) which confirms the Examiner's approval of the drawing correction proposed on 7 April 2000, but does not require submission of substitute formal drawings, is attached herewith.

In view of the above, it is respectfully requested that certificate of correction for Figures 1, 2, 3 and 5 for Patent of U.S. Patent No. 6,832,291 be issued on an expedited basis.

Should there be any question indicated, the Commissioner is respectfully requested to telephone Patentee's undersigned attorney at the below listed local telephone number.

Respectfully submitted,


Robert E. Bushnell,
Attorney for the Applicant/Patentee
Registration No.: 27,774

1522 K Street N.W.,
Suite 300
Washington, D.C. 20005
Telephone: (202) 408-9040

Folio: P54508
Date: 12/22/04
I.D.: REB/kf

DEC 29 2004

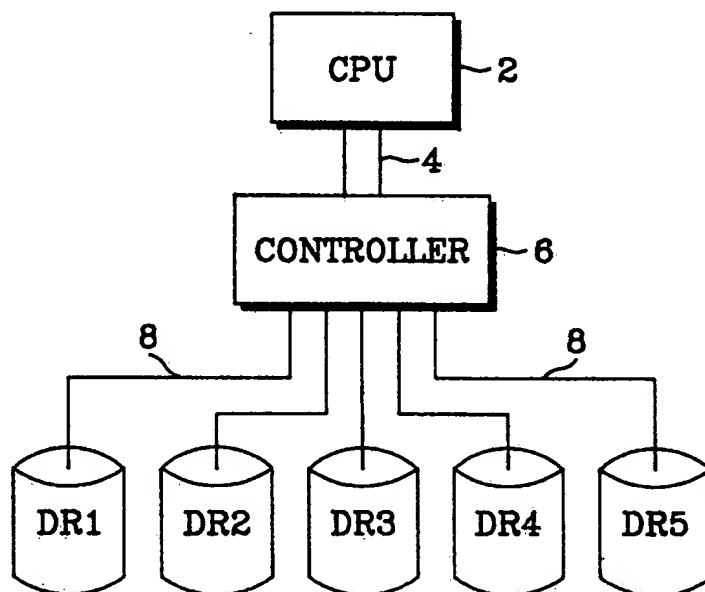
**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**PATENT NO : 6,832,291 *B2*

DATED : 14 December 2004

INVENTOR(S) : HAE-SEUNG LEE

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Please replace Figure 1:

*Fig. 1 (PRIOR ART)*

MAILING ADDRESS OF SENDER:

Robert E. Bushnell
1522 K Street, N.W., Suite 300, Washington, D.C. 20005

PATENT NO. 6,832,291

No. of additional copies ⇔ 3

Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

DEC 29 2004

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,832,291 *B2*

DATED : 14 December 2004

INVENTOR(S) : HAE-SEUNG LEE

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Please replace Figure 2:

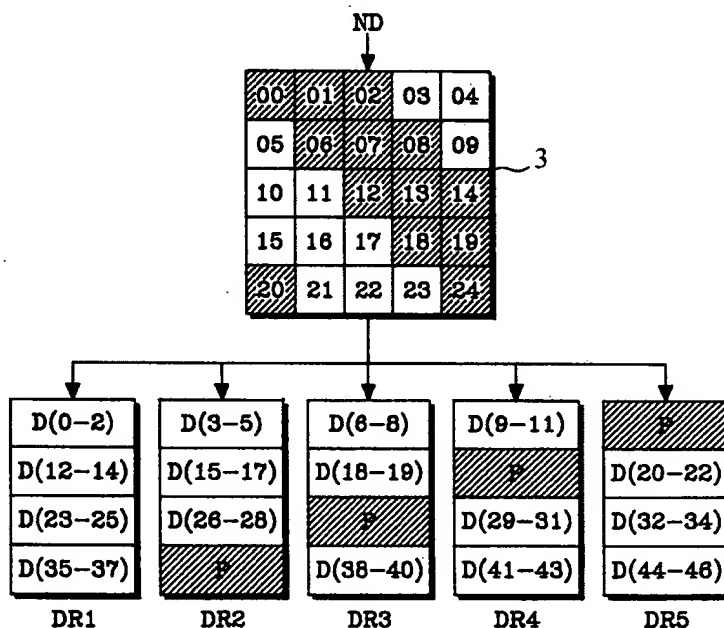


Fig. 2 (PRIOR ART)

MAILING ADDRESS OF SENDER:

Robert E. Bushnell
1522 K Street, N.W., Suite 300, Washington, D.C. 20005

PATENT NO. 6,832,291

No. of additional copies ⇌ 3

Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

DEC 29 2004

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,832,291 *B2*

DATED : 14 December 2004

INVENTOR(S) : HAE-SEUNG LEE

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Please replace Figure 3:

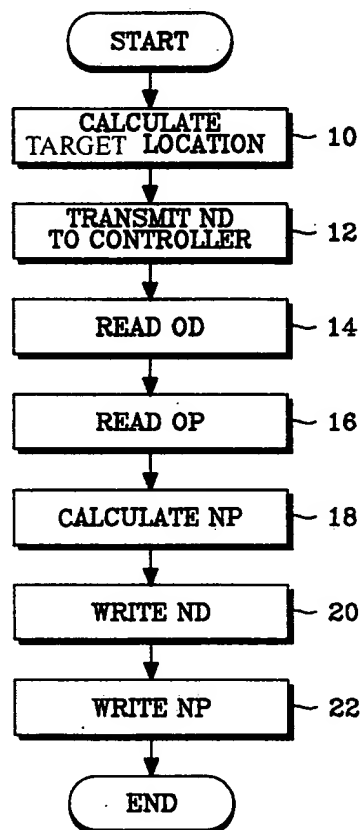


Fig. 3 (PRIOR ART)

MAILING ADDRESS OF SENDER:

Robert E. Bushnell
1522 K Street, N.W., Suite 300, Washington, D.C. 20005

PATENT NO. 6,832,291

No. of additional copies ⇔ 3

Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

DEC 29 2004

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,832,291 *62*

DATED : 14 December 2004

INVENTOR(S) : HAE-SEUNG LEE

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Please replace Figure 5:

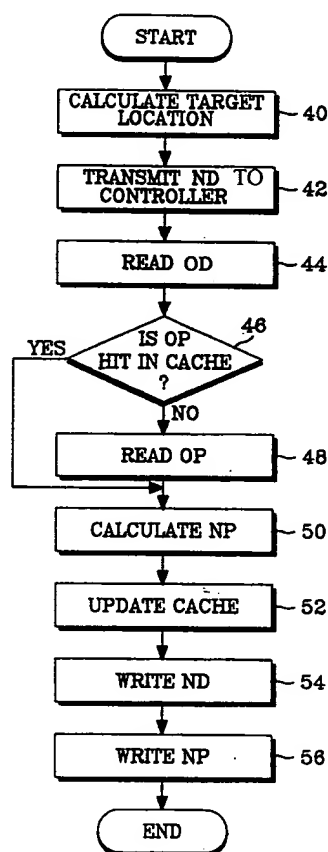


Fig. 5

MAILING ADDRESS OF SENDER:

Robert E. Bushnell
1522 K Street, N.W., Suite 300, Washington, D.C. 20005

PATENT NO. 6,832,291

No. of additional copies ⇌ 3

Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

DEC 29 2004



US006832291B2

(12) **United States Patent**
Lee(10) Patent No.: **US 6,832,291 B2**
(45) Date of Patent: **Dec. 14, 2004**(54) **MEMORY SYSTEM FOR IMPROVING DATA INPUT/OUTPUT PERFORMANCE AND METHOD OF CACHING DATA RECOVERY INFORMATION**(75) Inventor: **Hae-Seung Lee, Ahnyang (KR)**(73) Assignee: **Samsung Electronics Co., Ltd., Suwon (KR)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 222 days.

(21) Appl. No.: **08/931,125**(22) Filed: **Sep. 16, 1997**(65) **Prior Publication Data**

US 2002/0007438 A1 Jan. 17, 2002

(30) **Foreign Application Priority Data**

Sep. 16, 1996 (KR) 96-40202

(51) Int. Cl.⁷ **G06F 12/16; G06F 12/08**(52) U.S. Cl. **711/114; 711/113; 714/6**(58) Field of Search **711/112, 113, 711/114; 714/6, 7, 8**(56) **References Cited****U.S. PATENT DOCUMENTS**

5,257,367 A	10/1993	Goodlander et al.	707/204
5,341,381 A	8/1994	Fuller	371/10.1
5,367,669 A	11/1994	Holland et al.	395/575
5,418,921 A	5/1995	Cortney et al.	711/114
5,455,934 A	10/1995	Holland et al.	711/4
5,463,765 A	10/1995	Kakuta et al.	714/6
5,485,598 A	1/1996	Kashima et al.	714/6

5,522,032 A	5/1996	Franaszek et al.	714/6
5,530,948 A	6/1996	Islam	714/6
5,572,660 A	11/1996	Jones	714/6
5,579,474 A	11/1996	Kakuta et al.	714/6
5,583,876 A	12/1996	Kakuta	711/114
5,636,359 A	6/1997	Beardsley et al.	711/122
5,640,506 A	6/1997	Duffy	714/6
5,734,814 A	3/1998	Corbin et al.	714/6
5,737,741 A	4/1998	Hilditch et al.	711/114
5,809,206 A	9/1998	Seki	386/125
5,835,940 A	11/1998	Yorimitsu et al.	711/112

FOREIGN PATENT DOCUMENTS

JP	7-210334	7/1995
JP	7-200190	8/1995

* cited by examiner

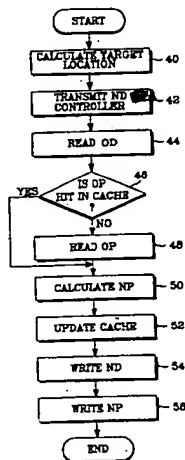
Primary Examiner—Gary Portka

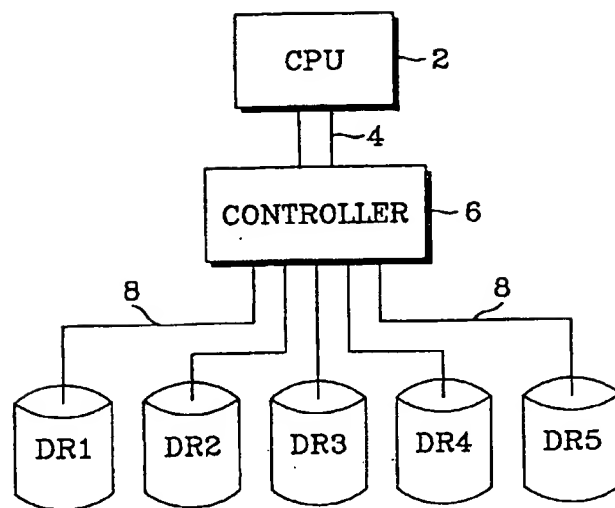
(74) Attorney, Agent, or Firm—Robert E. Bushnell, Esq.

(57) **ABSTRACT**

A redundant array of inexpensive disks (RAID) system includes a plurality of defect-adaptive memory devices for sequentially storing information needed for data recovery in a predetermined region of a recording medium in the form of block, and storing data in a region other than the predetermined region. A plurality of caches are connected to the adaptive memory devices to store information blocks needed for data recovery, the information blocks being read from a predetermined memory device. A controller is connected to each adaptive memory device and cache to control the writing and reading of data and information needed for data recovery in each memory device, calculate information needed for recovery of data read from each memory device, and store the information needed for recovery of data calculated in a predetermined cache.

9 Claims, 5 Drawing Sheets



*Fig. 1*

PRIOR ART

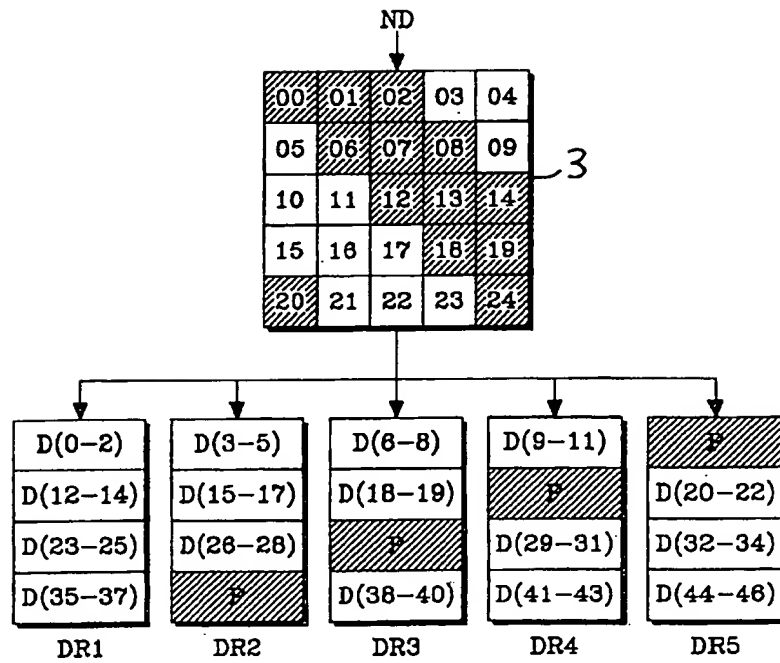
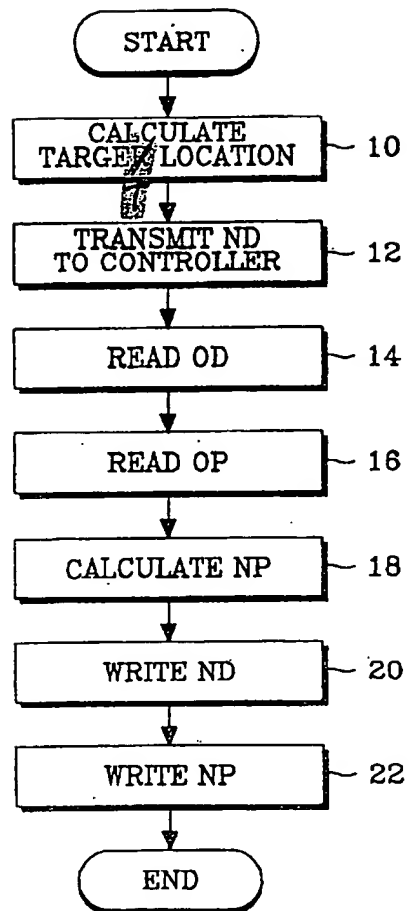


Fig. 2
PRIOR ART

*Fig. 3*

PRIOR ART

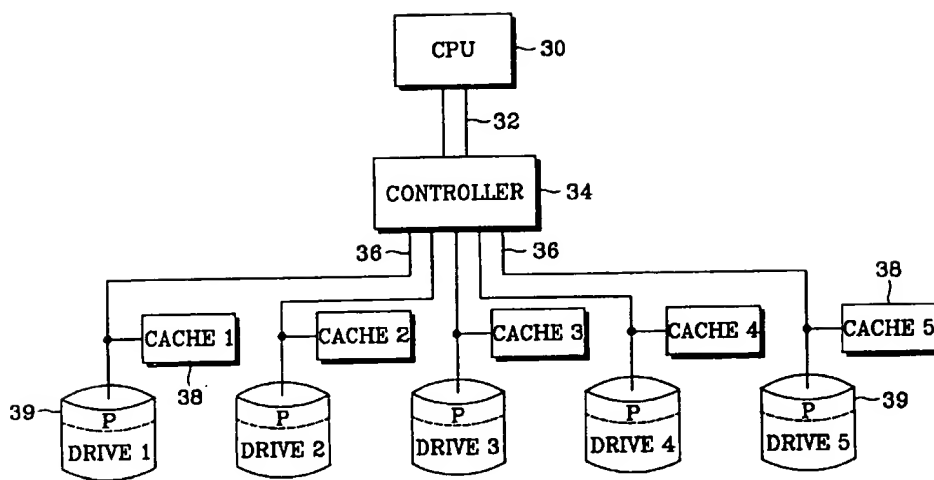
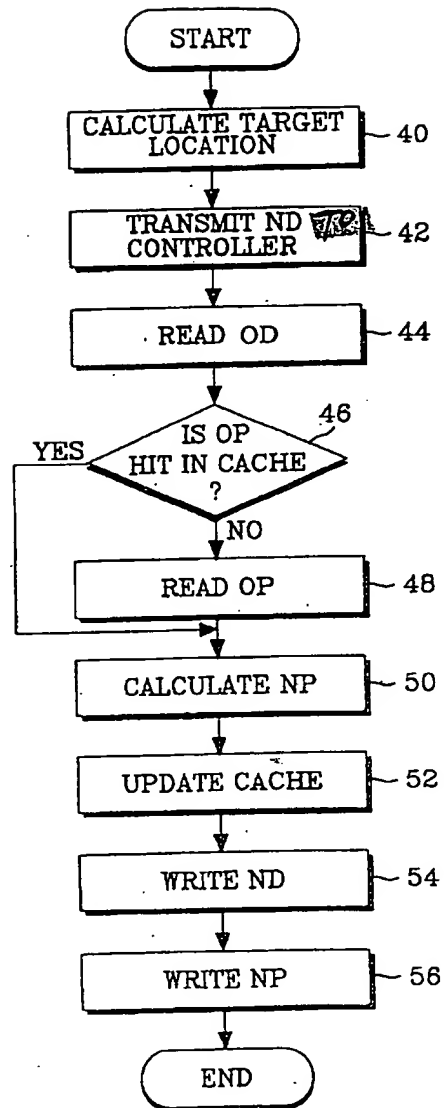
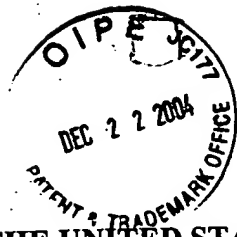


Fig. 4

*Fig. 5*



PATENT
P54508

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Hae-Seung LEE

Serial No.: 08/931,125

Examiner: PORTKA, GARY

Filed: 16 September 1997

Art Unit: 2759

For: MEMORY SYSTEM FOR IMPROVING DATA INPUT/OUTPUT
PERFORMANCE AND METHOD OF CACHING DATA RECOVERY
INFORMATION

LETTER TO THE OFFICE DRAFTSMAN

Assistant Commissioner
of Patents
Washington, D.C. 20231

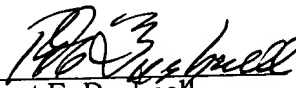
COPY

Sir:

Approval of the drawing corrections shown in red for the accompanying Figs. 1 through 3 and 5 is respectfully requested.

Indication in subsequent Office correspondence as to the acceptance of the drawing corrections proposed in the Letter is respectfully requested so as to enable Applicant to timely arrange for the corrections to be made prior to the date for payment of any issue fee.

Respectfully submitted,


Robert E. Bushnell
Attorney for Applicant
Reg. No.: 27,774

1522 K Street, N.W. Suite 300
Washington, D.C. 20005
(202) 408-9040

Folio: P54508
Date: 4/7/00
I.D.: REB/xl



1/5

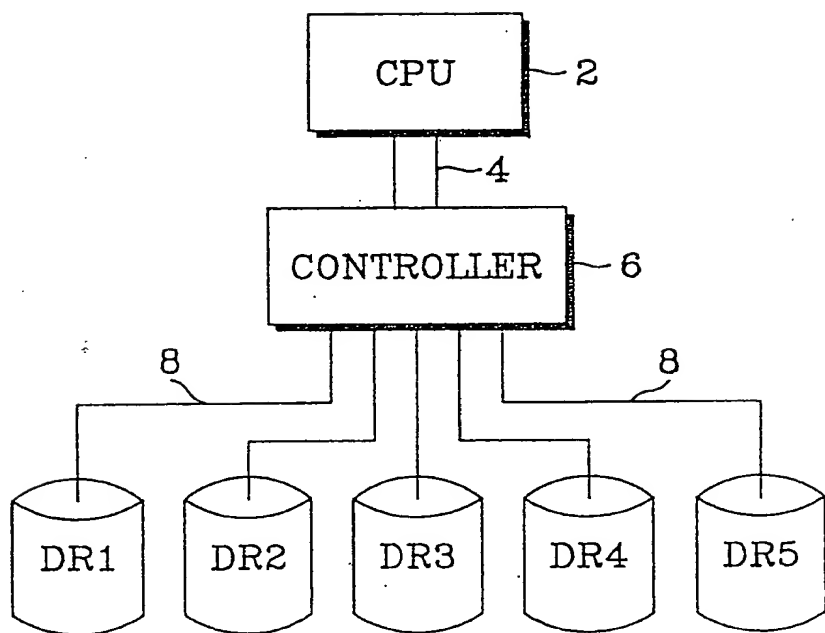


Fig. 1

~~NOVELTY~~
~~PRIOR ART~~



2/5

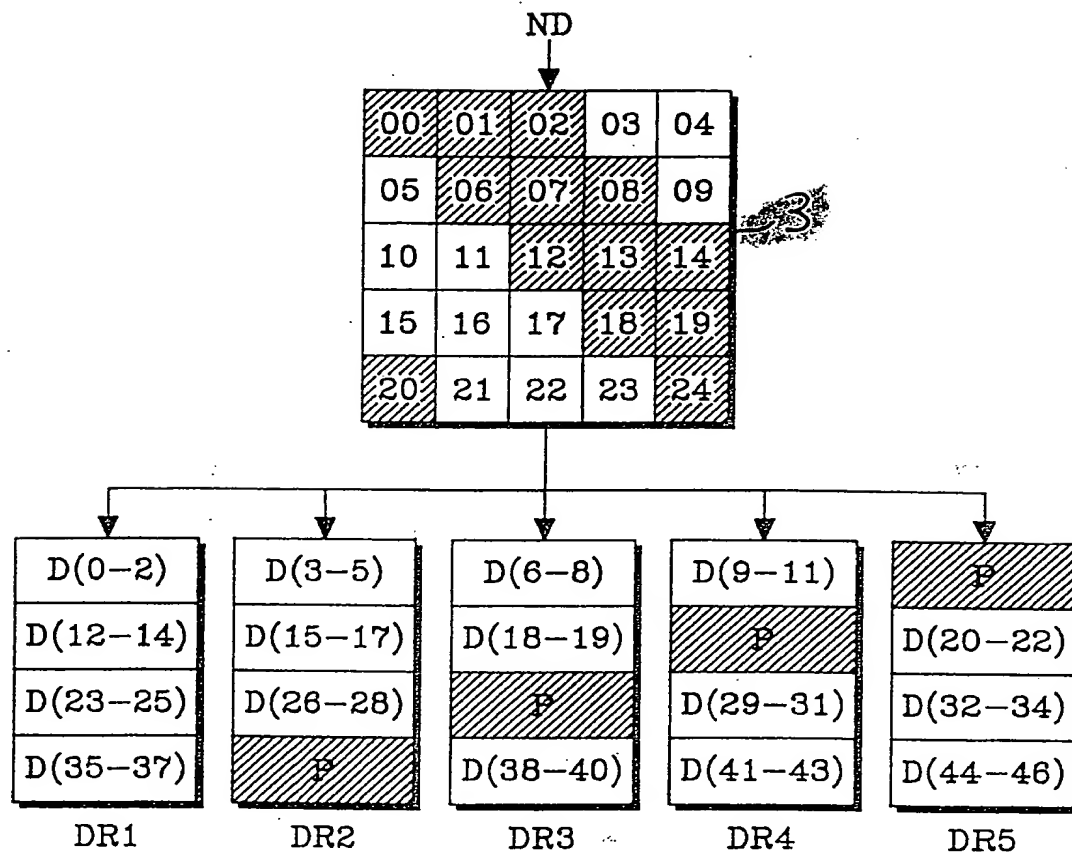


Fig. 2

PRIOR ART



3/5

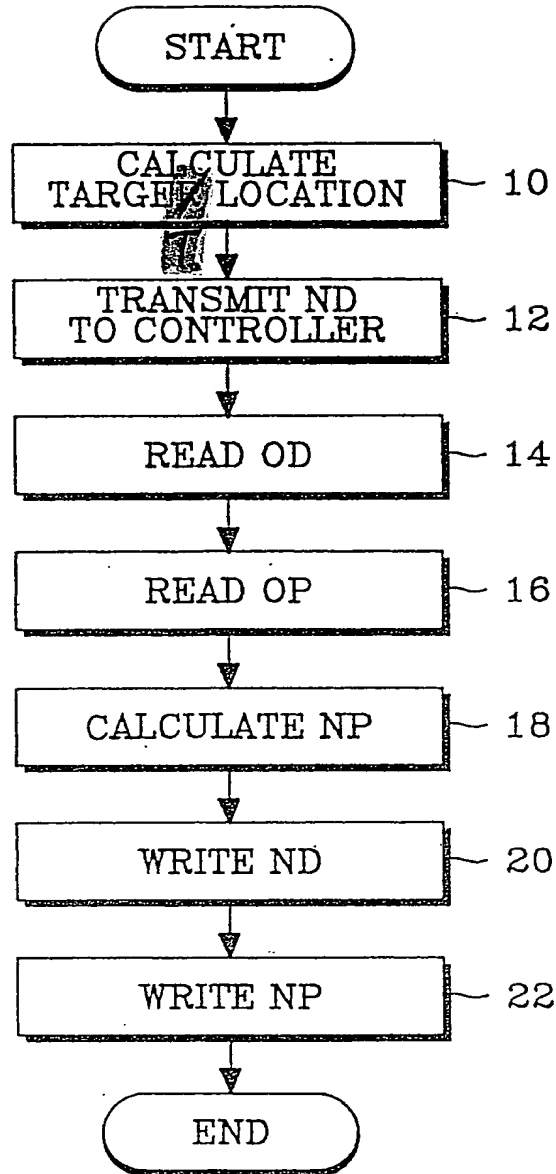


Fig. 3

~~PROPRIETARY~~
~~PRIOR ART~~



5/5

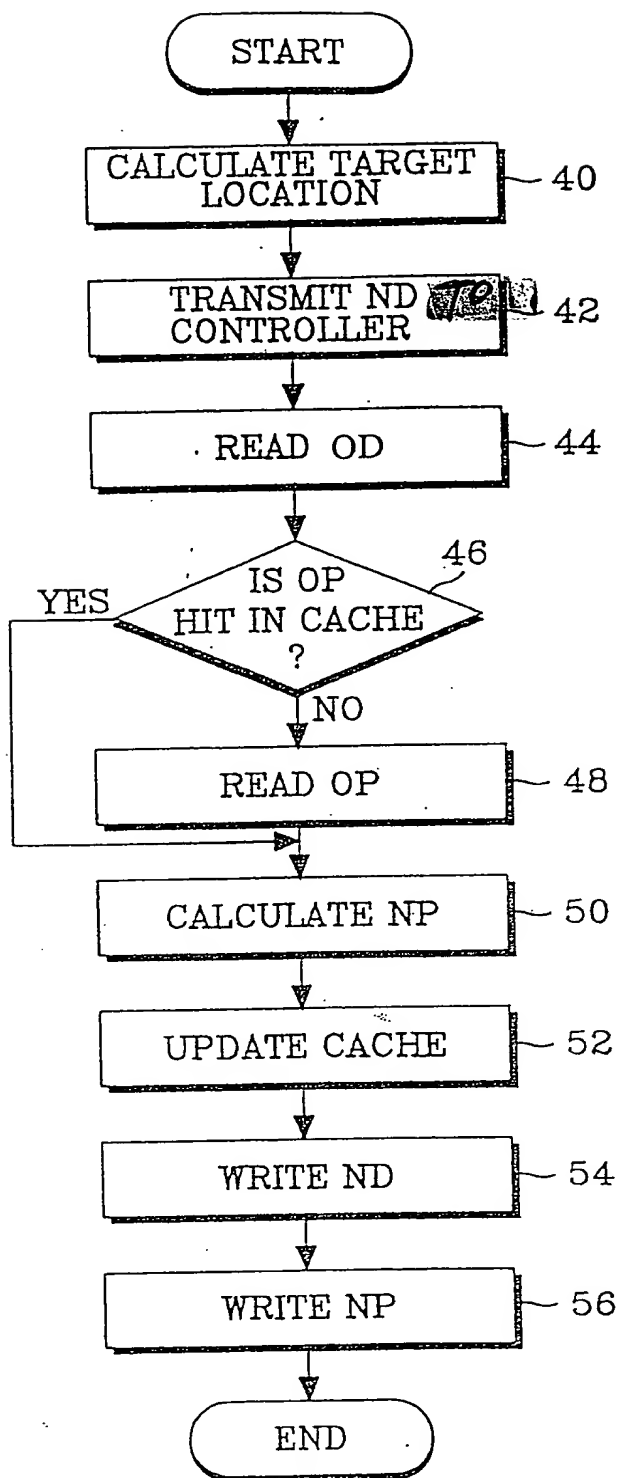


Fig. 5

Notice of Allowability



Application No.	Applicant(s)	
08/931,125	LEE, HAE-SEUNG	
Examiner	Art Unit	
Gary J Portka	2188	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address–

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed August 10, 2004.
2. ☒ The allowed claim(s) is/are 3-9 and 11-12, renumbered as 1-9 respectively.
3. ☒ The drawings filed on April 7, 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

COPY

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Gary J Portka
 Gary J Portka
 Primary Examiner
 Art Unit: 2188



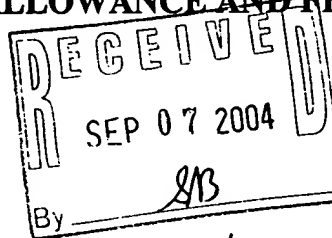
UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov



NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 09/03/2004
ROBERT E BUSHNELL
1522 K STREET, N.W. SUITE 300
WASHINGTON, DC 200051202



EXAMINER	
PORTKA, GARY J	
ART UNIT	PAPER NUMBER
2188	
DATE MAILED: 09/03/2004	

Issue fee due:
3 December 2004

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/931,125	09/16/1997	HAE-SEUNG LEE	P54508	3842

TITLE OF INVENTION: MEMORY SYSTEM FOR IMPROVING DATA INPUT/OUTPUT PERFORMANCE AND METHOD OF CACHING DATA RECOVERY INFORMATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1330	\$300	\$1630	12/03/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
- B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
- B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/931,125	09/16/1997	HAE-SEUNG LEE	P54508	3842

7590

09/03/2004

ROBERT E BUSHNELL
1522 K STREET, N.W. SUITE 300
WASHINGTON, DC 200051202

EXAMINER

PORTKA, GARY J

ART UNIT

PAPER NUMBER

2188

DATE MAILED: 09/03/2004



Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 222 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 222 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.